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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,052	09/26/2003	Phillip Joe Brock	HSJ9-2003-137-US1	1240
23980	7590	09/06/2006	EXAMINER	
MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND POPEO, P.C 1400 PAGE MILL ROAD PALO ALTO, CA 94304-1124			NUTTER, NATHAN M	
			ART UNIT	PAPER NUMBER
			1711	
DATE MAILED: 09/06/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/673,052

Applicant(s)

BROCK ET AL.

Examiner

Nathan M. Nutter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 20-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>09-03</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I, claims 1-19, in the reply filed on 23 June 2006 is acknowledged.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-19 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the use of furan, bis(furan), tris(furan) and tetrakis(furan) for the diene compound and for the use of maleimide or a plurality of maleimide group containing compounds for the dienophile component, does not reasonably provide enablement for dienes and dienophile compounds, broadly. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention commensurate in scope with these claims. What may be embraced by the terms "diene" and "dienophile" is not delineated or disclosed in the Specification so that a skilled artisan would know what to employ. The breadth of the terms does not enable the use of every such compound. The skilled artisan would be required to use the undue burden of experimentation to determine what may be employed.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The terms "diene" and "dienophile" render the claims as vague since it cannot be determined what the actual metes and bounds of the claims may be. The terms are deemed to embrace compounds that, by their very nature, such as in polymerized form, may not be suitable, as the claims recite, i.e. able to undergo a Diels-Alder reversible reaction.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 10, 12-14, 18 and 19 are rejected under 35 U.S.C. 102(a) as being anticipated by Jen et al (US 2004/0266954), newly cited.

The reference to Jen et al shows the production of a Diels-Alder reversible resin as claimed herein, using furan compounds (diene of claims 5 and 6) with a protected (furan-capped) maleimide compound (dienophile of claims 10 and 12-14). Note paragraphs [0010] and [0020] for the broad concept, paragraphs [0030]-[0031] for the furan-capping of the maleimide, which at paragraph [0033] is to prevent crosslinking prior to the "lattice hardening step" and is later, paragraph [0034], cleaved for the

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reaction to proceed. The recitations in claims 2-4 regarding the particular viscosity is deemed to be anticipated by the reference as being inherent since all other parameters are identically disclosed, and nothing in the claims can be seen as to differentiate over the reference. Further, the recitations of characteristics in claims 18 and 19 is deemed to be inherent for the same reasons, identical components with nothing to differentiate the claims over the reference.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6, 10 and 12-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jen et al (US 2004/0266954), cited and for the reasons set out above.

The reference to Jen et al shows the production of a Diels-Alder reversible resin as claimed herein, using furan compounds (diene of claims 5 and 6) with a protected (furan-capped) maleimide compound (dienophile of claims 10 and 12-14). Note paragraphs [0010] and [0020] for the broad concept, paragraphs [0030]-[0031] for the furan-capping of the maleimide, which at paragraph [0033] is to prevent crosslinking prior to the "lattice hardening step" and is later, paragraph [0034], cleaved for the

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reaction to proceed. The reference does not teach the protection of the diene component.

It is submitted that the reference teaches sufficiently that the dienophile moiety is protected to prevent the reaction from proceeding until which conditions are set, e.g. rise in temperature, as herein, the protecting group is cleaved. This concept is used widely throughout the chemical arts, for example in synthetic nucleotide processes, for the very reason set out in Jen et al. The use of a protected diene, as opposed to the dienophile, would be an obvious modification to a skilled artisan. Only one of the two is needed to be protected, and with only two components, either one would be suitable. As such, the claims are deemed to be obvious.

Claims 1-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jen et al (US 2004/0266954), cited and for the reasons set out above, taken with Small et al (US 6,271,335), cited by applicants.

The reference to Jen et al shows the production of a Diels-Alder reversible resin as claimed herein, using furan compounds (diene of claims 5 and 6) with a protected (furan-capped) maleimide compound (dienophile of claims 10 and 12-14). Note paragraphs [0010] and [0020] for the broad concept, paragraphs [0030]-[0031] for the furan-capping of the maleimide, which at paragraph [0033] is to prevent crosslinking prior to the "lattice hardening step" and is later, paragraph [0034], cleaved for the reaction to proceed. The reference does not teach the protection of the diene component.

The reference to Small et al shows the production of a Diels-Alder reversible resin as claimed herein, using furan compounds, including bis-, tris- and tetrakis(furan) (diene of claims 5-8) with a maleimide compound (dienophile of claims 10 and 11). Note the Abstract and column 1 (lines 52-68) for the basic concept. Note column 3 (lines 42-56) for the dienophile employed, and the paragraph bridging column 3 to column 4 for the dienes employed. Further, note Example 1 which shows a silicon containing diene as recited in claim 9.

The reference to Jen et al does not show the use of bis(furan), tris(furan) or tetrakis(furan) moieties in their reaction. These constituents are taught as being conventional for reversible Diels-Alder reactions, as herein claimed. Use thereof in view of Small et al would be within the skill of an artisan. Further, Jen et al do not show a silicon containing diene, as disclosed by Small et al. Again, it would have been within the skill of an artisan to employ such in the composition of Jen et al based upon the disclosure of Small et al.

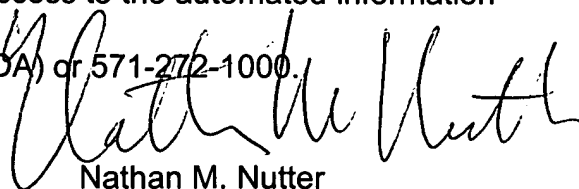
The reference to Jen et al teaches sufficiently that the dienophile moiety is protected to prevent the reaction from proceeding until which conditions are set, e.g. rise in temperature, as herein, the protecting group is cleaved. This concept is used widely throughout the chemical arts, for example in synthetic nucleotide processes, for the very reason set out in Jen et al. The use of a protected diene, as opposed to the dienophile, would be an obvious modification to a skilled artisan. Only one of the two is needed to be protected, and with only two components, either one would be suitable. As such, the claims are deemed to be obvious.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan M. Nutter whose telephone number is 571-272-1076. The examiner can normally be reached on 9:30 a.m.-6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James J. Seidleck can be reached on 571-272-1078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Nathan M. Nutter
Primary Examiner
Art Unit 1711

nmn

1 September 2006